

U.S. Application No. 10/774,028, filed February 6, 2004  
Attorney Docket No. 14329US02  
Response dated June 4, 2010

In Response to Office Action mailed January 4, 2010

### **Amendments to the Claims**

This listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A system for communications, comprising:  
a transport layer/network layer processing stack; and  
an intermediate driver coupled to the transport layer/network layer processing stack via a first miniport and a second miniport[[],];  
a first network interface card coupled to the intermediate driver; and  
a second network interface card coupled to the intermediate driver,  
wherein the first miniport supports teaming over the first network interface card and the second network interface card, and  
wherein the second miniport provides is dedicated to a dedicated upload path for the second network interface card of a system that can offload traffic from the transport layer/network layer processing stack,  
wherein the second network interface card uses the second miniport for first traffic uploaded from the system that can offload traffic from the transport layer/network layer processing stack and uses the first miniport for second traffic related to the teaming with the first network interface card, and  
wherein the first network interface card uses the first miniport for third traffic related to the teaming.

2. (Currently Amended) The system according to claim 1, wherein a first NDIS miniport is communicatively disposed between the intermediate driver and the first interface card, and wherein a second NDIS miniport is communicatively disposed between the intermediate driver and the second network interface card, and wherein a virtual bus driver is communicatively disposed between the second NDIS miniport and the second network interface card further

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eomprising:

    a first network interface card coupled to the intermediate driver; and  
    a second network interface card coupled to the intermediate driver,  
    wherein the second network interface card supports the system that can offload traffic  
from the transport layer/network layer processing stack; and  
    wherein the first miniport, the first network interface card and the second network  
interface card support teaming.

3. (Currently Amended) The system according to claim 2 1, wherein the first network interface card comprises a plurality of network interface cards.

4. (Currently Amended) The system according to claim 2 1, wherein the second network interface card comprises a remote-direct-memory-access-enabled (RDMA-enabled) network interface card.

5. (Currently Amended) The system according to claim 2 1, wherein the second network interface card is the only network interface card that supports traffic from the system that can offload traffic from the transport layer/network layer processing stack.

6. (Original) The system according to claim 1, wherein the transport layer/network layer processing stack comprises a transmission control protocol/internet protocol (TCP/IP) stack.

7. (Original) The system according to claim 1, wherein the first miniport comprises a virtual miniport instance.

8. (Original) The system according to claim 7, wherein the virtual miniport instance

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comprises a virtual miniport instance adapted for teamed traffic.

9. (Original) The system according to claim 1, wherein the second miniport comprises a virtual miniport instance.

10. (Original) The system according to claim 9, wherein the virtual miniport instance comprises an RDMA-enabled virtual miniport instance.

11. (Original) The system according to claim 1, wherein the system that can offload traffic from the transport layer/network layer processing stack comprises a Winsock Direct system.

12. (Original) The system according to claim 1, wherein the second miniport supports traffic that is processed by the transport layer/network layer processing stack.

13. (Original) The system according to claim 1, wherein the second miniport supports traffic that has not been offloaded by the system that can offload traffic from the transport layer/network layer processing stack.

14. (Original) The system according to the claim 1, wherein traffic that has been offloaded by the system that can offload traffic from the transport layer/network layer processing stack bypasses the transport layer/network layer processing stack and the intermediate driver.

15. (Original) The system according to claim 1, wherein the intermediate driver supports teaming.

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16. (Original) The system according to claim 1, wherein the intermediate driver comprises a network driver interface specification (NDIS) intermediate driver.

17. (Original) The system according to claim 1, wherein the intermediate driver is aware of the system that can offload traffic from the transport protocol/network protocol processing stack.

18. (Original) The system according to claim 1, wherein teaming supports load balancing.

19. (Original) The system according to claim 1, wherein teaming supports fail over.

20. (Original) The system according to claim 1, wherein teaming supports virtual network capabilities.

21. (Currently Amended) A system for communications, comprising:

a first set of network interface cards comprising a second set and a third set of network interface cards, the second set comprising a network interface card that is capable of offloading one or more connections, the third set comprising one or more network interface cards that are not capable of providing an offload path; and

an intermediate driver coupled to the second set and to the third set, the intermediate driver being part of a host computer and supporting teaming over the second set and the third set, the host computer supporting iWARP traffic;

a host protocol processing stack coupled to the intermediate driver via a first virtual miniport instance and a second virtual miniport instance,

wherein the teamed traffic of the second set and the third set passes through the first

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virtual miniport instance, and

wherein uploaded traffic from an offload system passes through only the second virtual miniport instance that is dedicated to the third set, and

wherein fail over and the teaming are only performed by the host computer and/or one or more of the network interface cards the intermediate driver provides load-balancing over some or all of the first set.

22. (Previously Presented) The system according to claim 21, wherein the second set provides a kernel bypass path and wherein the third set does not provide a kernel bypass path.

23. (Previously Presented) The system according to claim 21,

wherein the second set is associated with a system that is capable of offloading one or more connections,

wherein the system that is capable of offloading one or more connections offloads a particular connection, and

wherein packets carried by the particular offloaded connection bypass the intermediate driver.

24. (Currently Amended) The system according to claim 21, wherein the intermediate driver supports teaming over the first set provides fail over procedures.

25. (Currently Amended) The system according to claim 21, wherein the host computer communicates, via a team of network interface cards from the second set and the third set, with a remote peer over a network further comprising:

a host protocol processing stack coupled to the intermediate driver via a first virtual miniport instance and a second virtual miniport instance;

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wherein the first virtual miniport instance is associated with traffic of the second set and the third set; and

wherein the second virtual miniport instance is associated solely with traffic of the third set.

26. (Currently Amended) A method for communicating, comprising:

(a) teaming a plurality of network interface cards using an intermediate driver of a host computer, the intermediate driver providing load balancing over some or all of the network interface cards and providing fail over procedures, wherein the teaming is only performed by the host computer and/or the plurality of network interface cards, wherein plurality of network interface cards support remote direct memory access (RDMA) traffic, wherein teamed traffic passes through a first miniport that is communicatively disposed between a host TCP/IP stack and the intermediate driver;

(b) adapting at least one network interface card of the plurality of network interface cards to provide an offload path and an upload path for an offload system, the upload path passing through a second miniport dedicated to the adapted at least one network interface, the second miniport being communicatively disposed between the host TCP/IP stack and the intermediate driver, the offload path bypassing the intermediate driver and the host TCP/IP stack; and

(c) adapting remaining network interface cards of the plurality of network interface cards not to provide an offload path, wherein the teamed traffic over the adapted at least one network interface card and the adapted remaining network interface cards passing through the first miniport.

27. (Currently Amended) The method according to claim 26, wherein (b) comprises solely associating [[a]] the offload system that is capable of offloading one or more connections

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with a single network interface card of the plurality of network interface cards.

28. (Currently Amended) A method for communicating, comprising:
- teaming a plurality of network interface cards of a host computer, the plurality of network interface cards not providing an offload path that bypasses a kernel of the host computer;
- adding an additional network interface card to the host computer, the additional network interface card providing an offload path of an offload system that bypasses the kernel of the host computer and an upload path of the offload system that passes through the kernel of the host computer, the upload path passing through a first miniport that is dedicated to uploaded traffic and the additional network interface card, the first miniport being communicatively disposed between an intermediate driver and the host TCP/IP processing stack;
- teaming the plurality of network interface cards and the additional network interface card, the teamed traffic passing through a second miniport communicatively disposed between the intermediate driver and the host TCP/IP processing stack; and
- providing by the intermediate driver, layer-2 load balancing over the plurality of network interface cards and the additional network interface card, the intermediate driver being communicatively disposed between (1) the host TCP/IP processing stack and (2) the plurality of network interface cards and the additional network interface card.

29. (Currently Amended) The method according to claim 28, further comprising:
- handling packets of a particular connection only via the additional network interface card, the particular connection being maintained by [[a]] the offload system that is capable of offloading traffic from the host TCP/IP protocol processing stack.

30. (Currently Amended) The method according to claim 28, wherein the intermediate driver provides fail over procedures additional network interface card, which has been teamed

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~~with the plurality of network interface cards, is adapted to provide an upload path that passes through the kernel of the host computer.~~

31. (Currently Amended) The method according to claim 28, further comprising:

processing packets of a particular connection via [[a]] the host TCP/IP protocol processing stack, the particular connection not being an offloaded connection although being maintained by [[a]] the offload system that is capable of offloading traffic from the host protocol stack.

32. (Original) The method according to claim 31, further comprising:

transmitting the processed packets only through the additional network interface card.